Public Pension Plan Volatility – What Can We Do About It? An Actuary's Perspective

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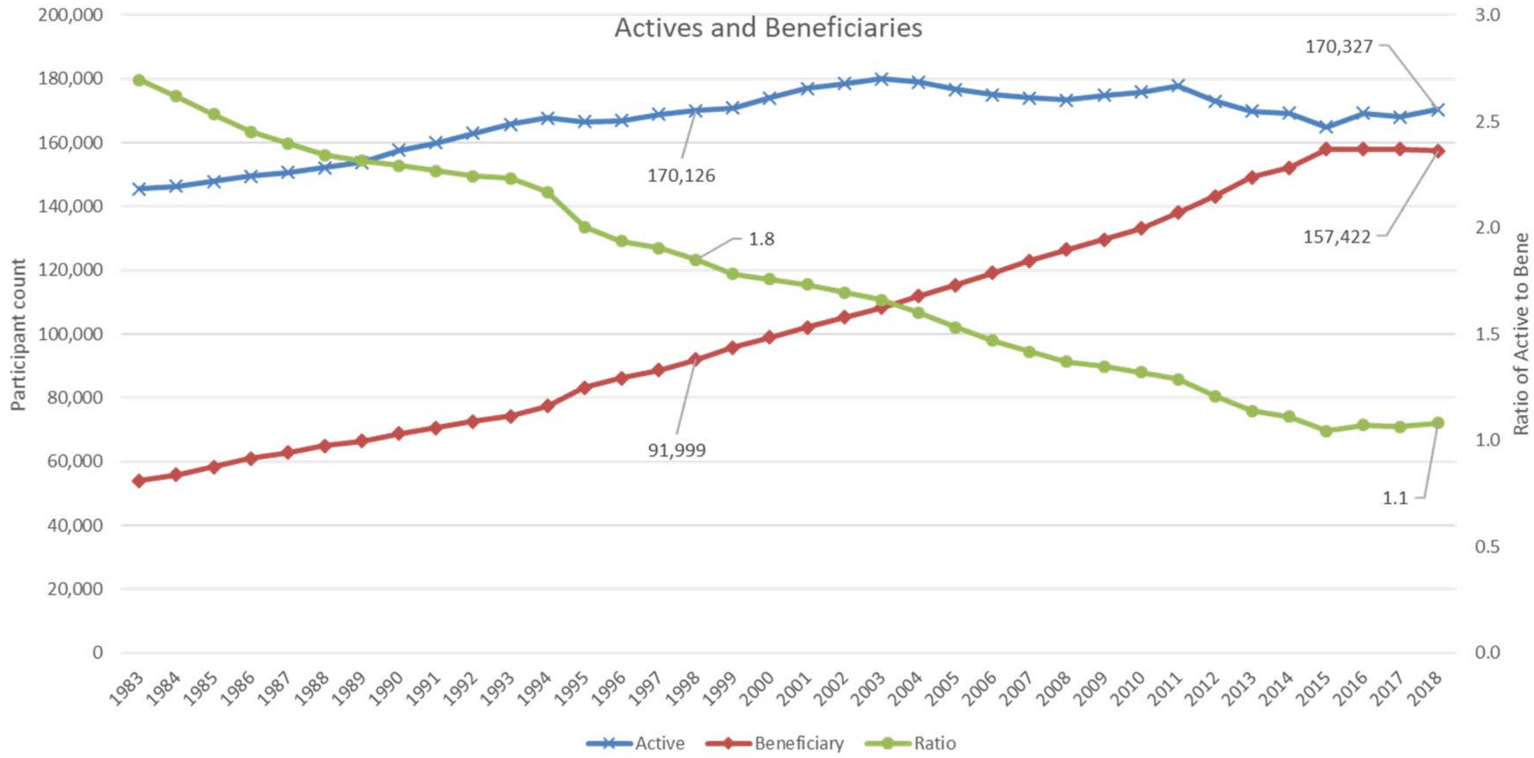
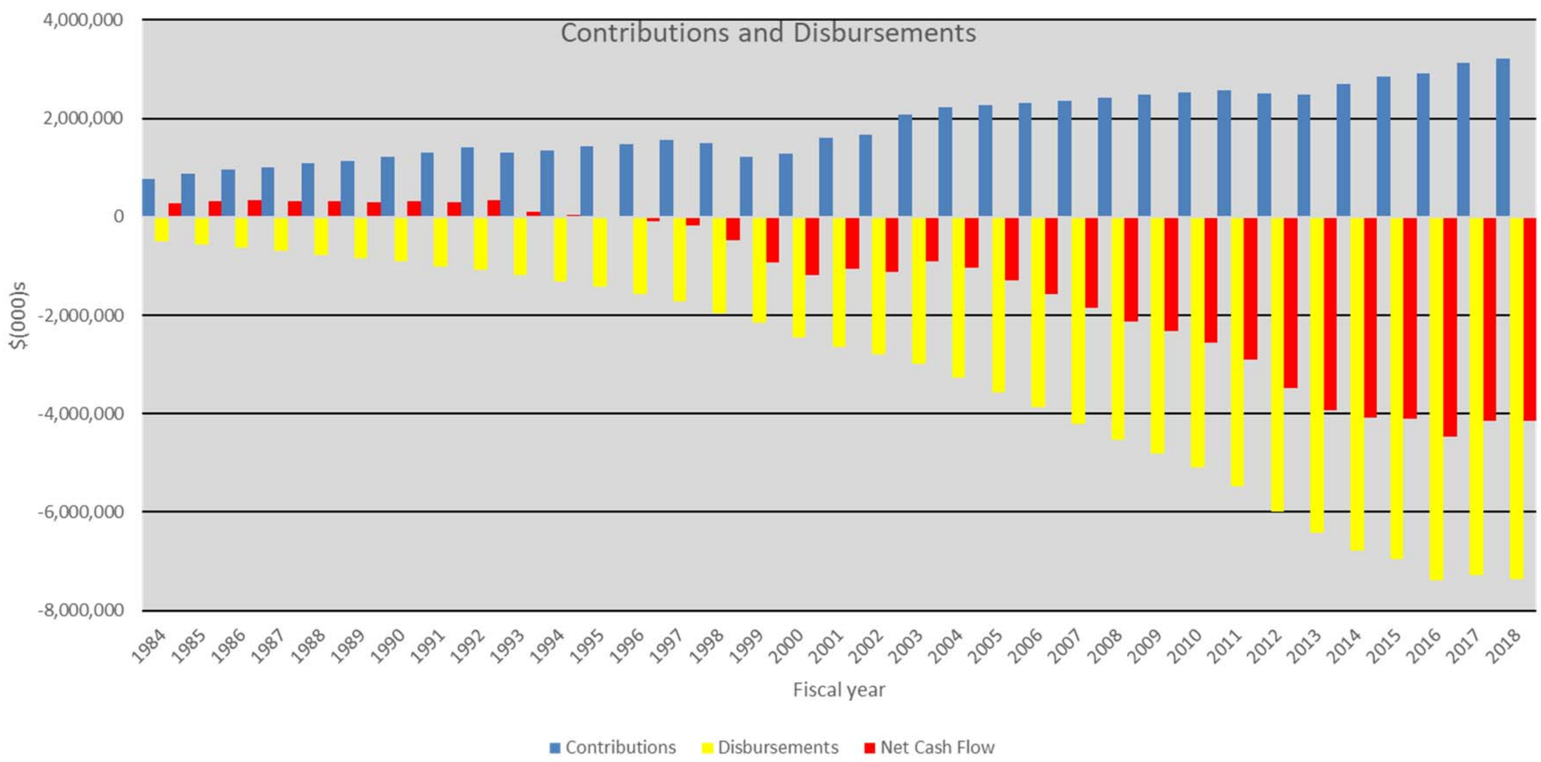
Real-world context

- This conference has a focus on what volatility means for public pensions.
- I want to present a real-world, tangible example.
- To understand the approach STRS Ohio is taking, you need to understand the context.
- Pension systems are dynamic – like an oak tree, not a mayfly, but nonetheless dynamic.

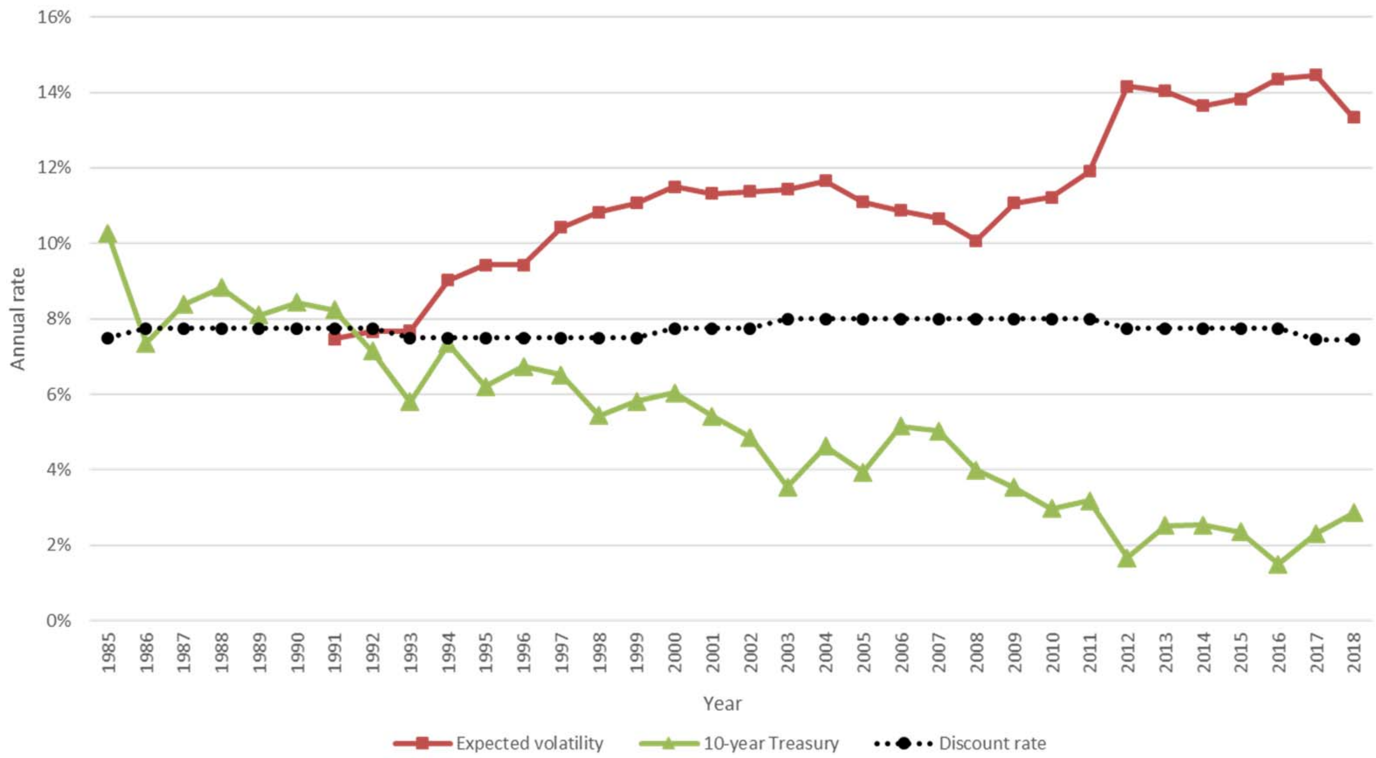
Changing demographics…



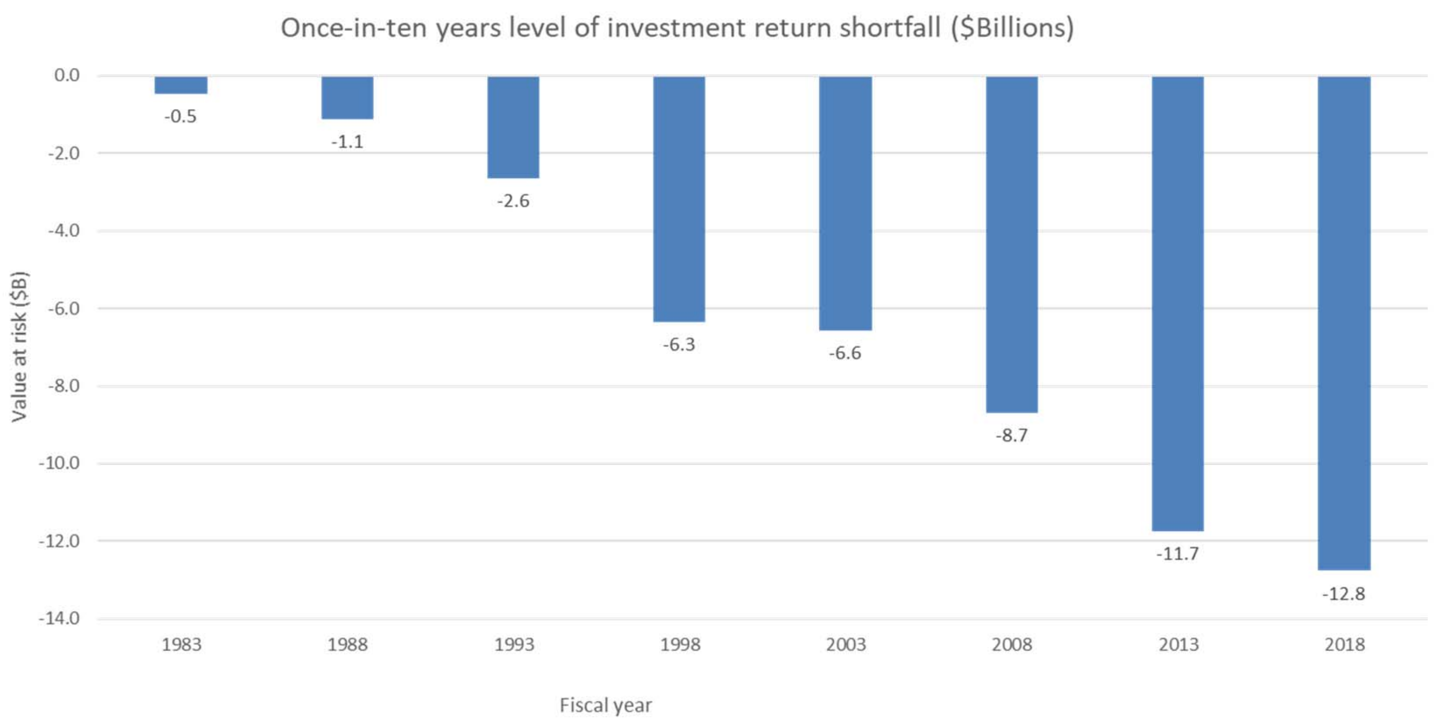
Lead to constrained cash flows…



In a very different economic environment…



Resulting in a risk of larger investment losses…



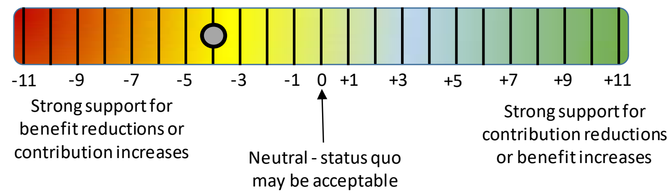
Which could be very difficult to make up for.

Responding to volatility risk

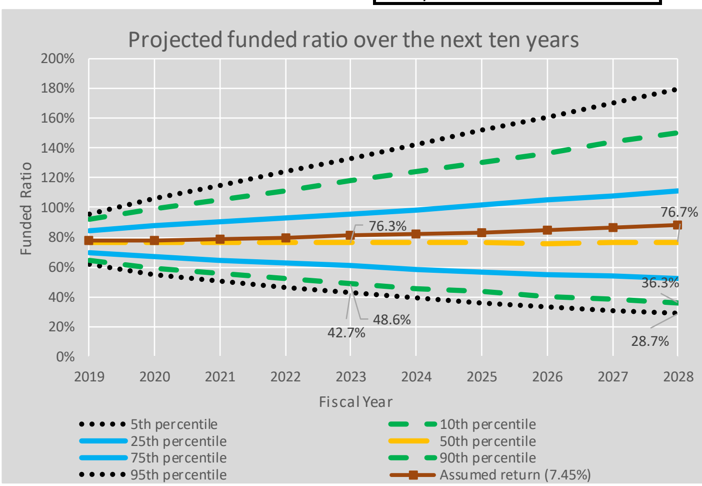
- DB=Guaranteed. No risk for the participants (in an ideal world).
- But clearly risk exists (and has been steadily growing), so it all falls on the plan sponsor; as shown, this risk is large.
- What can we do about volatility?
  - The level of volatility a plan takes is a plan design decision, a board risk tolerance decision.
  - From an actuary's perspective, we can understand what the targeted level of volatility could mean for the plan; we can measure it, monitor it, and plan for it.
  - If you are going to take on volatility risk, do so with your eyes open, knowing the potential consequences, positive and negative.
  - That is the reason for the funding policy, and it was the driving factor in our adoption of a funding dashboard and scorecard.

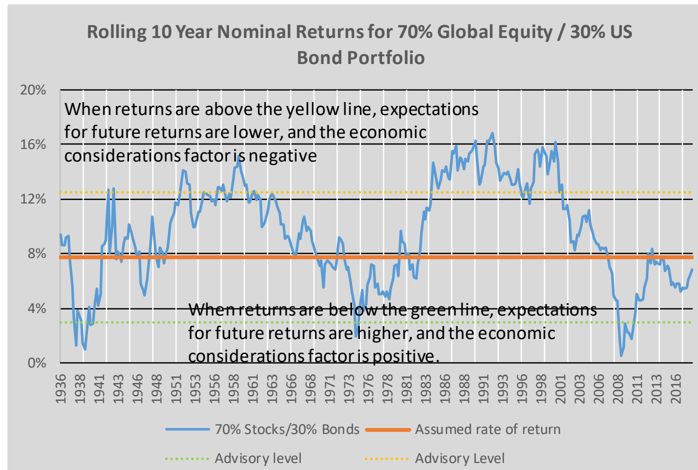
Funding Policy Dashboard - July 1, 2018

	Actual	Upside Advisory Level	Downside Advisory Level	Contribution to Summary Score	Range
Funded Ratio					
Current year	77.0%	100.0%	66.5%	-1	-3 to +3
Prior year	75.0%	100.0%	66.0%	-1	-2 to +2
Funding Period					
Current year	17.8 years	0 years	27 years	0	-2 to +2
Prior year	18.4 years	0 years	28 years	0	-1 to +1
Chance of a major negative event*					
Funded Ratio under 50%	28.8%	2.5%	10.0%	-1	-1 to +1
Funding Period over 100 yrs	21.6%	2.5%	10.0%	-1	-1 to +1
Economic Considerations**					
10-year returns	6.8%	3.0%	12.5%	0	-1 to +1
Summary Score				**-4**	**-11 to +11**
Prior year score				-5	



% of payroll paid to amortize the UAAL (DB)	17.1%
Estimated volatility of the investment portfolio	13.3%
Assumed rate of return for valuation	7.45%
Risk-free rate of return (10-year Treasury)	2.85%
Risk premium required to hit return target	4.60%
Inflation over trailing 12 months	2.80%





*Estimated chance that the result is worse than some catastrophic threshold (<50% for funded ratio, >100 years for funding period) on any valuation date in the next 10 years

** Rolling average 10-year return for a portfolio of 70% equity and 30% bonds, rebalanced quarterly

Scorecard

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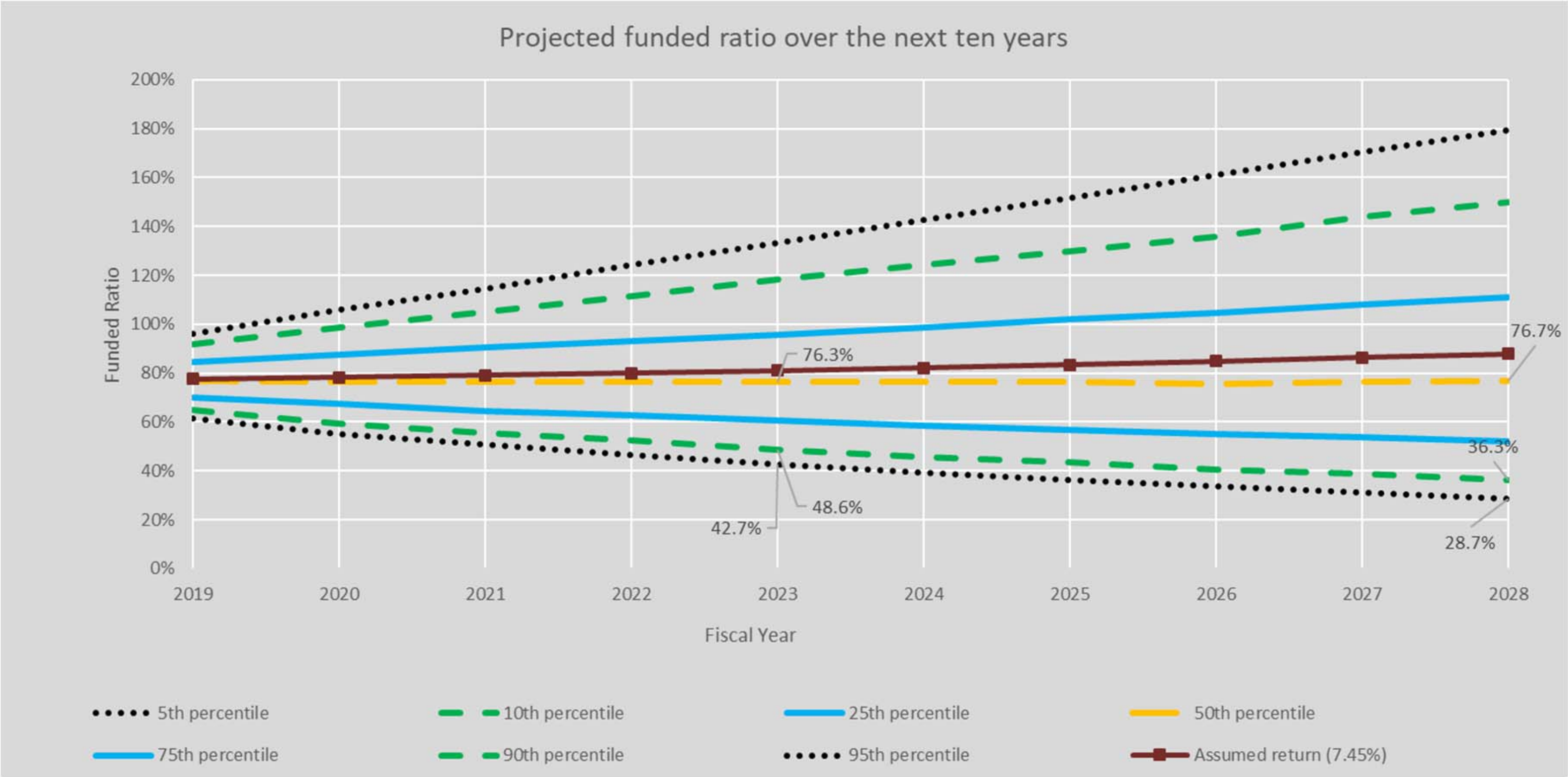
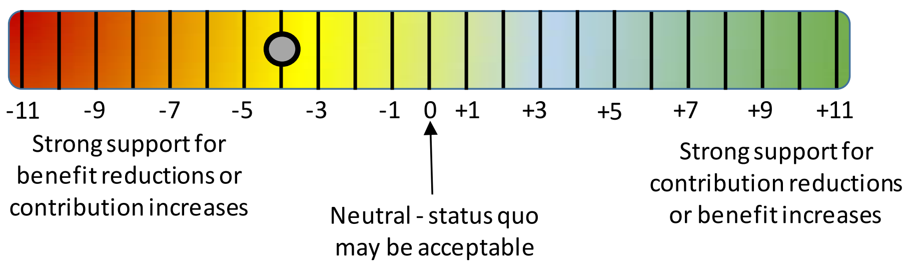
Stochastic projections



Summary score



A score of -6 or lower suggests the need to pursue additional contributions or benefit reductions.

A score of +6 or higher suggests the need to pursue contribution reductions or benefit enhancements.

The more extreme the score, the stronger the support for changes.

Implementation process

- Multi-year developmental and educational processes.
- Board presentations and stakeholder meetings.
- Initially adopted in 2016.
- Revised in 2019.

How it's used

- Integrated into the funding policy.
- Updated each year as part of the annual valuation.
- Referenced much more often as part of discussions about balancing contributions and benefits.
- Some elements are included in stakeholder communications.

Questions?